

Total Quality Management – A short intro

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Introduction:

This article is an attempt to put across a few thoughts concerning Total Quality Management (TQM) as a concept.

We always ask what is Quality? We have our individual ways to understand the term Quality because of its importance in our day-to-day life but also in our working environment. Due to this, the Egyptians had coined the term 'Quality' around two thousand years B.C by devising measures of length and also areas. They were the pioneers to establish 365.2 days a year and also divided it into 12 months. Later on Babylonians (around 1800 B.C) established a policy for enforcing strict control over quality. Afterwards Greeks, Romans and others started using the term and determined many standards.

Some of the best-known definitions of quality are:

According to Joseph Juran, Quality is "fitness for use"

As per Philip B Crosby, Quality is "conformance to requirements".

With ref to business, Quality of a product or services is its ability to satisfy the needs and expectations of the customer.

The meaning of the word quality has changed considerably after the World War II. The meaning also gets driven by the perception of the sender and receiver of the message. It is therefore, necessary for the organization and its people to have a clear and similar understanding of the meaning of quality to avoid confusion. All organizations make an attempt to carry out improvement of quality, which can be predicated on change. Gradual change results from small improvement to the status quo through continuous efforts that involves everyone; whereas abrupt change comes from innovation – A drastic improvement in the status quo.

But in today's world, the client / customer is becoming demanding day by day. A clause in the contract for reducing the fixed percentage of selling price every year has become a requisition. Selling price has to be reduced even though ones own fixed cost like rent / lease of the building; man power cost will definitely levitate. The only solution for this will be minimizing the waste and reducing the process without compromising on quality. In this modern business world, where nothing is assured the only way for success is making the customer delight by giving flawless quality with minimum cost. To achieve this Total Quality Management is the best tool.

Total Quality is a description of the civilization, attitude and association of a company that endeavor to provide customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations,

with processes being done right the first time so that defects and wastes are eliminated from business operations.

Total Quality Management is the organization-wide management of quality. Management consists of planning, organizing, directing, control, and assurance. Total quality is called total because it consists of two qualities: quality of return to satisfy the needs of the customers/stakeholders, or quality of products.

As defined by the International Organization for Standardization (ISO): "TQM is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society."

Although TQM techniques were adopted prior to World War II by a number of organizations, the creation of the Total Quality Management philosophy is generally attributed to Dr. W. Edwards Deming as he is the father of the quality management.



Dr. W. Edwards Deming
1900 - 1993

"We have learned to live in a world of mistakes and defective products as if they were necessary to life. It is time to adopt a new philosophy in America."

"The right quality and uniformity are foundations of commerce, prosperity and peace." W E Deming (1900–1993)

Deming offered fourteen key principles for management for transforming business effectiveness. They are as follows:

1. To create constancy of purpose toward improvement of product and services. (Maintain the objective and plan it towards improvement)
2. To adopt the new philosophy. It is not possible to live with commonly accepted levels of delays, mistakes, defective workmanship.
3. Stop dependence on mass inspection. Require instead, statistical evidence that quality is built in.
4. Stop practice of awarding business on the basis of profit and loss.

5. To improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. To institute modern methods of training on the job.
7. Institute modern methods of supervision of production workers. The responsibility of foremen must be changed from numbers to quality.
8. Drive out fear, so that everyone may work effectively for the company.
9. To break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.
10. To eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.
11. a. To eliminate work standards on the floor and substitute leadership.
b. To eliminate management by objective
12. Remove barriers that stand between the hourly worker and his right to pride of workmanship.
13. Institute a vigorous program of education, self-improvement or retraining.
14. Create a structure in top management that will follow everyday.

TQM Process Thinking

TQM is a collection of principles, techniques, processes, and best practices that over time have been proven effective. Most all world-class organizations exhibit the majority of activities that are typically identified with TQM.

TQM requires a new process thinking mindset. We must realize that everything we do is part of a process. Our focus shifts from managing outcomes to managing and improving processes; from what to do to how to do the processes better. Quality performance expands to include how well each part of the process works and the relationship of each part to the process. Also, process improvement focuses on continuously achieving the greatest potential benefit for our customers.

No two organizations have the same TQM implementation. There are no guidelines for organization success; however, there are a number of great TQM models that organizations can use. These include the Deming Application Prize, the Malcolm Baldrige Criteria for Performance Excellence, the European Foundation for Quality Management, and the ISO quality management standards. Any organization that wants to improve its performance would be well served by selecting one of these models and conducting a self-assessment.

Continuous improvement of all operations and activities is at the heart of TQM. Once it is recognized that customer satisfaction can only be obtained by providing a high-quality product, continuous improvement of the quality of the product is seen as the only way to maintain a high level of customer satisfaction. As well as recognizing the link between product quality and customer satisfaction. TQM also recognizes that product quality is the result of process quality. As a result, there is a focus on continuous improvement of the company's processes. This will lead to an improvement in process quality. In turn this will lead to an improvement in product quality, and to an increase in customer satisfaction. Improvement cycles are encouraged for all the company's activities such as product development, use of

Product Data Management and the way customer relationships are managed. This implies that all activities including measurement and monitoring of cycle time and responsiveness as a basis for seeking opportunities for improvement. Elimination of waste is a major component of the continuous improvement approach. There is also a strong emphasis on prevention rather than detection, and an emphasis on quality at the design stage. The customer-driven approach helps to prevent errors and achieve defect-free production. When problems do occur within the product development process, they are generally discovered and resolved before they can get to the next internal customer.

Fast response

To achieve customer satisfaction, the company has to respond rapidly to customers needs. This implies short product and service introduction cycles. These can be achieved with customer-driven and process-oriented product development because the resulting simplicity and efficiency greatly reduces the time involved. Simplicity is gained through concurrent product and process development. Efficiencies are realized from the elimination of non-value-adding effort such as re-design. The result is a dramatic improvement in the elapsed time from product concept to first shipment.

Actions based on facts

The statistical analysis of engineering and manufacturing facts is an important part of TQM. Facts and analysis provide the basis for planning, review and performance tracking, improvement of operations, and comparison of performance with competitors. The TQM approach is based on the use of objective data, and provides a logical rather than an emotional basis for decision making. The statistical approach to process management in both engineering and manufacturing recognizes that most problems are system-related, and are not caused by particular employees.

In practice, data is collected and put in the hands of the people who are in the best position to analyze it and then take the appropriate action to reduce costs and prevent non-conformance. Usually these people are not managers but workers in the process. If the right information is not available then the analysis cannot take place, errors cannot be identified, and so errors cannot be corrected.

TQM Tools

Here follows a brief description of the basic set of Total Quality Management tools. They are:

- Pareto Principle
- Scatter Plots
- Control Charts
- Flow Charts
- Cause and Effect , Fishbone, Ishikawa Diagram
- Histogram or Bar Graph
- Check Lists
- Check Sheets

Pareto Principle

The Pareto Principle also known as 80/20 principle. It can be applied to business analysis and decision making in strategy development, resources management, sales management, quality management, operations management, logistics, etc. This simple but powerful approach deals with identifying and distinguishing between the vital few and the trivial many business issues. Not all causes and activities produce the same amount of problems or opportunities.

Scatter Plots

A scatter plot displays the data for two variables. A scatter plot is effectively a line graph with no line - i.e. the point intersections between the two data sets are plotted but no attempt is made to physically draw a line.

Control Charts

Control charts are a method of Statistical Process Control, SPC. (Control system for production processes). They enable the control of distribution of variation rather than attempting to control each individual variation. Upper and lower control and tolerance limits are calculated for a process and sampled measures are regularly plotted about a central line between the two sets of limits. The plotted line corresponds to the stability/trend of the process. Action can be taken based on trend rather than on individual variation. This prevents over-correction/compensation for random variation, which would lead to many rejects.

Flow Charts

Pictures, symbols or text coupled with lines, arrows on lines show direction of flow. Flow charts enable modeling of processes; problems/opportunities and decision points etc. and develops a common understanding of a process by those involved. No particular standardization of symbology, so communication to a different audience may require considerable time and explanation.

Cause and Effect, Fishbone, Ishikawa Diagram

Cause and effect are concerned with why things happen (causes) and what happens as a result (effects). Cause and effect is a common method of organizing and discussing ideas. The cause-and-effect diagram is a method for analyzing process dispersion. The diagram's purpose is to relate causes and effects. The diagram can also be used in reverse fashion to identify what contributes to a desired solution — a 'solution effect' diagram.

Histogram or Bar Graph

A Histogram is a graphic summary of variation in a set of data. It enables us to see patterns that are difficult to see in a simple table of numbers. Histograms can be analyzed to draw conclusions about the data set. A histogram is a graph in which the

continuous variable is clustered into categories and the value of each cluster is plotted to give a series of bars as above.

Check Sheets

A Check Sheet is a data recording form that has been designed to readily interpret results from the form itself. It needs to be designed for the specific data it is to gather. Used for the collection of quantitative or qualitative repetitive data. It is adaptable to different data gathering situations.

Check Lists

A Checklist contains items that are important or relevant to a specific issue or situation. Checklists are used under operational conditions to ensure that all important steps or actions have been taken. Their primary purpose is for guiding operations, not for collecting data. Generally it is used to check that all aspects of a situation have been taken into account before action or decision making.

Benefits of TQM

- TQM is designed for **long term operation and survival of organisation** in stable environments
- TQM assumes that **employees care** about the performance of the organisation
- TQM regards the organisation as **holistic, open system**: Theory of system, systems within the system. The survival of the organisation depends on how well it serves its customers and other stakeholders
- TQM stresses **continuous improvement** for the benefit of all that are related to the organisation.
- TQM focuses on **training and education**
- TQM focuses on **work processes** and cross functional teams
- TQM advocates **management by fact**; interplay of theory prediction and collection of data, systematic data collection and interpretation to monitor processes and the understanding of variation
- TQM appreciates that **people are whole individuals**, with individual learning styles, emotions (fear, pride etc.).

(Note: Author has not directly referred to any other existing papers/articles while writing this paper. If it matches with the views expressed in any existing articles, it is purely coincidental)